DEVELOPMENT OF THE RECOMMENDED DISCOUNT RATE ASSUMPTION

The approach used to determine the recommendation for a discount rate assumption took into account both short and long term expectations as well as reflecting the expected cash flows for the pension fund.

The first step in this approach was to derive market return assumptions for each asset classification for years 11 and beyond. The actuarial office worked closely with investment staff in developing an approach that could be used to derive these market return assumptions. There was a common agreement that expected return for years 11 and beyond should be higher than is expected of the next 10 years but that they should be lower than the historical returns when looking back to the 1920s.

Below is a table that shows both the expected geometric return (before administrative expenses) for the first 10 years and the expected return for years 11 and beyond.

Time Period	Expected Geometric Return (Before Administrative Expenses)
First 10 Years	7.38%
Years 11 and Beyond	8.50%

The expected geometric return of 8.50% for years 11 and beyond was derived by first obtaining the historical geometric returns for each asset classification and adjusting them to reflect current market conditions. For example, for public equity, the market return assumption for the first 10 years was an expected geometric return of 7.75%. Long term historical geometric returns have been about 9.8%. This rate was adjusted down to 8.76% to reflect current market conditions and how these initial conditions were believed to impact long term returns. The same fundamental approach was used for each asset classification leading to different levels of adjustment for each asset classification.

Using the above expected returns, annual investment returns were stochastically generated for the next 60 years. The first 10 years were simulated based on an expected return of 7.38% and a standard deviation of 11.9%. Years 11 and beyond were simulated using the same volatility of 11.9% but based on an expected return of 8.50%. Overall, 10,000 scenarios of 60 years each were simulated.

For purposes of choosing a discount rate assumption for actuarial valuation, we adopted a method that considers future expected benefit payments. Because benefit payments that will be paid over the next 10 years have more weight than benefit payments paid 30 or 40 years from now, it would be inappropriate to base the assumption on the expected return for the next 50 years.

Using the expected benefit payments for the PERF, it was determined that a 19 year period would be ideal to use in determining a reasonable range for a discount rate assumption. The 19 year period was determined to be the length of time required to equate the present value of future benefit payments using the select and ultimate investment returns with the present value of future benefit payments using the level discount rate.

The simulated returns were used together with the asset allocation mix adopted by the CalPERS Board to determine the 25th to 75th percentile range of the geometric expected return over a period of 19 years. The 25th, 50th and 75th percentiles for the geometric rates of return for a period of 19 years are shown in the table below.

Percentile Results

Horizon in Years	25th Percentile	50th Percentile	75th Percentile
19	6.11%	7.95%	9.82%